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AUTHOR Dowdall, George W.
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AVAILABLE FROM George Dowdall, Department of Sociology, State University College at Buffalo, 1300 Elmwood Ave., Buffalo, New York 14222 (free)

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ABSTRACT

Utilizing data for blacks, Mexican Americans, Puerto Ricans, and other Spanish heritage Americans, a model of urban differentiation was evaluated. Building on recent research of black-white patterns, the model related some structural characteristics of metropolitan areas (manufacturing employment, the presence of two important minorities, recent increases in the size of a minority, population size, and region) to educational, occupational, and income differentiation. The overall results suggested the model's utility. Differentiation in 1970, measured by the index of dissimilarity between two percentage distributions, was highest between Puerto Ricans and Anglos in the Middle Atlantic states and between blacks and Anglos in the South. Four separate analyses indicated the importance of occupational differentiation and particularly educational differentiation in influencing income differentiation. The regional analyses showed manufacturing employment to be particularly important in lowering black-Anglo differentiation; percent black in lowering Puerto Rican differentiation (in contrast to expectations about the impact of interminority competition); percent Spanish heritage minority in raising Latino-Anglo differentiation in the Southwest (an index of Anglo gains from Latino subordination); and area population size in lowering Latino-Anglo differentiation elsewhere. (Author/NQ)

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MODELS OF METROPOLITAN SOCIOECONOMIC DIFFERENTIATION: A COMPARISON AMONG BLACK, LATINO, AND ANGLO PATTERNS IN 1970.*

George W. Dowdall

Department of Sociology
State University College at Buffalo
1300 Elmwood Avenue
Buffalo, New York 14222
(716)862-6329/5411

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ABSTRACT

This paper presents a causal model of socioeconomic differentiation between the Anglo majority and important minority groups in American metropolitan areas. Building on recent research, particularly by Bahr and Gibbs and Jiobu and Marshall, the model relates some structural characteristics of metropolitan areas (manufacturing employment, the presence of two important minorities, recent increases in the size of a minority, population size, and region) to educational, occupational, and income differentiation. Differentiation in 1970, measured by the index of dissimilarity between two percentage distributions, is highest between Puerto Ricans and Anglos in the Middle Atlantic states and between blacks and Anglos in the South. While important regional differences force the presentation of four separate analyses, the overall results suggest the utility of the model. These analyses point to the importance of occupational differentiation and particularly educational differentiation in influencing income differentiation. The regional analyses show manufacturing employment to be particularly important in lowering black-Anglo differentiation; percent black in lowering Puerto Rican differentiation (in contrast to expectations about the impact of inter-minority competition); percent Spanish heritage minority in raising Latino-Anglo differentiation in the Southwest (an index of Anglo gains from Latino subordination); and area population size in lowering Latino-Anglo differentiation elsewhere. An illustrative analysis of the role of Spanish surname-Anglo residential segregation in the Southwest shows it to have very great impact on other dimensions of assimilation, in contrast to previous research on black-white patterns.

Despite the obvious importance of assessing models of minority-majority differentiation in terms of the experience of a number of minority groups, few studies have been truly comparative in character. While a significant body of research has accumulated about the question of urban socioeconomic differentiation, this literature consists almost entirely of studies of a single minority group (usually American blacks or 'nonwhites') and its experience in terms of a majority group (usually American whites or the 'non-black' population). The present study uses data for a number of American minority groups -- blacks, Mexican-Americans, Puerto Ricans, and other Spanish heritage Americans -- to evaluate a model of urban differentiation which builds directly on recent studies of black-white patterns (Bahr and Gibbs, 1967; Jiobu and Marshall, 1971). The study should reveal whether there are significant differences in the processes of urban structural differentiation among these minority groups, and the degree to which factors such as residential segregation and minority population increase, presence of another minority group, and the metropolitan economic base affect the experiences of these groups.

Use of the term "assimilation" has been avoided in favor of the more neutral word "differentiation". As Metzger (1971) has noted about the black experience, "assimilation" has acquired connotations which often assume either some long-term outcome (e.g. the inevitable end of a racially or ethnicallly plural nation) or some particular (usually liberal) stance about the process by which a group enters "the mainstream". Questions of racism aside, such implications only cloud the

attempt to study processes of change in urban populations. In this research, "differentiation" refers only to the measured degree of dissimilarity between two populations in some trait or characteristic.

The Problem

In the present research, we will examine differentiation in three areas strategic for the understanding of urban social stratification -- education, occupation, and income. Jiobu and Marshall (1971) argued that urban racial differentiation could best be discussed as a complex causal process in which ecological, demographic, and economic factors were causally linked directly and indirectly with a series of 'outcomes' -- the specific dimensions of social and economic differentiation. As Figure 1 (adapted from Jiobu and Marshall) indicates, their

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Figure 1 About Here

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model included the arguments that income differentiation between blacks and whites was in part determined directly by occupational differentiation, which in turn was determined in part by educational differentiation; other factors such as the rate of black population increase and the per cent of the labor force in manufacturing determined in part the values of the 'outcomes' of educational, occupational, and income differentiation. Given the assumptions of path analysis, the four variables to the left of the diagram were taken as exogenous, while all other variables in the system were taken as caused either by other variables in the system or by uncorrelated residual variables.

Recasting the problem in these terms allowed the detailed examination of how urban racial differentiation was the direct and indirect product of a number of other issues; use of path analysis permitted relatively precise quantitative estimates of the direct and indirect impact of causal factors on differentiation. Values for the model were estimated using 1960 Census data for whites and non-whites in 74 larger American cities.

The present research will assess the utility of a similar model for the study of other American minorities, specifically such Spanish heritage minority groups as Mexican-Americans and Puerto Ricans. The basic data for the present study come from the 1970 Census (U.S. Bureau of the Census, 1972 and 1973). In contrast to the use of urban place data by Jiobu and Marshall (1971), the unit of analysis in this study is the Standard Metropolitan Statistical Area (SMSA), which represents an entire urban community somewhat more usefully than either the urban place or Urbanized Area concepts (see Hill, 1974; Bahr and Gibbs, 1967). The present research attempts to extend the earlier work in this area by examining the impact of the presence of one sizable minority group on the dimensions of differentiation between another minority group and the majority population (the population neither black nor from a major Spanish-language minority), labelled here, with certain reservations, the "Anglo" population. Partly to make comparisons more easily in the limited space available, and partly to deal with problems previously confronted by others in studying urban differentiation (c.f. Hawley, 1972; Jiobu and Marshall, 1972), the following analysis deliberately simplifies the earlier model.

Thus it is more exploratory then definitive in character, and we will try to point to questions which need more extensive development in future research.

Development of the Model

The most important arguments of the Jiobu-Marshall model, themselves based on previous research and discussion in the literature (e.g., Bahr and Gibbs, 1967), will first be summarized. Industrial structure (indicated in previous research by the percent of the labor force in manufacturing or some similar measure) was found to be linked directly and indirectly to racial differentiation, with manufacturing employment generally linked to expanding job possibilities for blacks as well as having an impact on further minority migration to a particular area (c.f. Turner, 1951; Thompson, 1965).

The relative size of the minority (percentage in the local population) was linked with differentiation through either competition or exploitation. Jiobu and Marshall cite Blalock's (1956; 1957) arguments that the white perception of an increasing local black population, posing a competitive threat, would be met by increased discrimination: thus explains the positive correlation between percentage black and racial income differences. Citing Glenn's (1966) research on white gains from black subordination in 1960, Jiobu and Marshall point to the alternative explanation of the increased opportunity for majority exploitation of a minority population as predicting a positive association between percentage black and higher socioeconomic differentiation (for an examination of the "white gains" thesis in 1970, see Dowdall, 1974).

Previous research (Bahr and Gibbs, 1967; Taeuber and Taeuber, 1965) pointed to important regional effects on socioeconomic differentiation: Jiobu and Marshall assumed some lingering regional differences in their model for blacks and whites, particularly between the South and the rest of the country.

Finally, Bahr and Gibbs (1967) discuss a large number of reasons which predict, but report little evidence of, a link between residential differentiation and other dimensions of differentiation. Jiobu and Marshall, citing the potential economic and cultural effect, assume ghettoization of blacks will have important direct and indirect links to these other issues.

Figure 1 shows the causal model developed by Jiobu and Marshall (1971). The reader is referred to their work (1971; also, Hartley, 1972; Marshall and Jiobu, 1972) and Bahr and Gibbs (1967) for a more complete discussion of the ordering of the model. Of primary importance is the ordering of the dimensions of educational, occupational, and income differentiation; both Bahr and Gibbs (1967) and Jiobu and Marsahll (1971), as well as other researchers in social stratification, argue for this ordering as a useful one. Briefly, occupational position is assumed to be importantly influenced by training and other educational outputs, and income is largely (but in a capitalist society, by no means totally) dependent on occupation.

The placement of black population increase proved problematic in the original model since, contrary to the hypothesized positive direct and indirect effects on socioeconomic differentiation, the path analysis

showed negative effects. Hartley (1972) notes that these negative relationships may reflect the tendency of blacks to migrate toward areas in which black-white differences are minimized. Marshall and Jiobu (1972) respond properly by noting that the ordering of the model was consistent with existing theory, and the results may necessitate some reordering in further research, particularly to take into account the potentially reciprocal character of the relationship. Minority population increase is treated as an exogenous factor, and no attempt has been made to examine it as mediating between the other structural items and majority/minority differentiation.

The present research makes no attempt, save in the case of residential segregation, to introduce any actual temporal difference in the measurement of the exogenous and endogenous variables. Jiobu and Marshall (1971) argue cogently that the impact of ghettoization should be felt for some time, and that, by contrast, occupational and income shifts will have an almost immediate effect on segregation. Their argument about the less immediate effects of the other structural factors, particularly industrial structure, seems less persuasive, given the relatively immediate impact which expansion or contraction of industry has had on minority opportunity in this country. Moreover, the impact of the relative size of the minority or its relative increase should be felt almost immediately; perception by the majority of a rapid influx of a minority appears to occur soon after the arrival of the newcomers (if not in anticipation of it). For these reasons, all of the measures are for 1970, with the exception of the measures of residential segregation in 1960. While this simplifies data

collection, it is obvious that a more complex model which can study the short-and-long-term effects of community structure should be of great interest.

Jiobu and Marshall (1971) limited their study to those 74 urban places with poulations of at least 100,000, with nonwhite populations of at least 2,500, and with at least 85% of the nonwhite population black. They argued persuasively that, given the high residential concentration of blacks in the central city, use of urban place data controlled for the potentially important impact of suburbanization.

In the present research, it is assumed that the effects of differential suburbanization (and what they are awaits future study) are merely an extension of the more general question of the geographic and other aspects of socioeconomic differentiation. Thus, it seems reasonable to use that census areal unit which includes the widest extent of the contemporary American community, in a time when the extent of even the S.M.S.A. may often underbound the true urban community of American society. Following Bahr and Gibbs (1967:526), the present research uses the S.M.S.A. as the unit of analysis as the closest equivalent to the concept of "community" (for a cogent argument for the use of the S.M.S.A. unit in research or local inequality, see Hill, 1974).

It is clear that their data also limited the impact of size of community, suspected by others (e.g. Thompson, 1965) of having a substantial independent impact on the allied question of income inequality, though they did examine the effect of the relative size of the minority community on socioeconomic differentiation. In the present research,

a much more diverse set of communities is studied, and total population size is explicitly examined as an exogenous factor. Moreover, no restrictions on the minimum size or composition of the minority population are used. Given that 1960 data were published on nonwhites, and 1970 data on blacks, the problem of population heterogeneity which doubtless motivated Jiobu and Marshall to exclude cities with nonwhite populations less than 85% black has been reduced but not eliminated. Use of the "Anglo" (rather than the non-black) population as a base for examining differentiation reduces the problem of the allied question of the homogeneity of the 'majority' population, though considerable ambiguity remains.

Finally, the model presented here examines the impact of the presence of a second important minority group (e.g., Puerto Ricans) on the socioeconomic differentiation of a particular minority (e.g., Blacks) vis-a-vis the majority population. If two minorities compete for roughly the same resources in a local community, this impact should be positive; i.e., higher percentages of the other minority in the population should be linked to higher levels of differentiation. This should be especially evident for occupation, but seems likely to occur for the other dimensions as well. For the present analysis, we assume additive effects only, with the expectation that later models will include attention to interaction

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Figure 2 About Here

Figure 2 presents the basic model examined in this research. The usual assumptions of path analysis have been made (Duncan, 1966), and ordinary least-squares techniques in making estimates. In some instances the model of Figure 2 is expanded by adding or deleting one or two exogenous variables: region and residential segregation.

Data and Measurement of Variables

All of the measures for this study were drawn from the U.S. Census. The units of analysis are all of the 243 SMSA's defined in the 1970 census; with the exception of the indexes of residential segregation, all of the measures discussed below are the entire metropolitan area population and for both sexes. In a strict sense, therefore, the results are not comparable with those of Jiobu and Marshall (1971), which were based on 1960 data for 74 urban places, with measurement of male occupational structure only, with a different measure of population increase, and which examined the nonwhite population (rather than the Negro population). The present research compares blacks and Spanish heritage minorities with the Anglo population (the total population minus black and Spanish heritage components), while Jiobu and Marshall studied the white (including Spanish heritage) and nonwhite populations.

Differentiation in education, occupation, and income is measured by the index of dissimilarity between two percentage distributions, themselves calculated from published census data. The index of dissimilarity is defined mathematically as half of the sum of the absolute differences between two percentage distributions; it can vary

theoretically between zero (when the distributions are exactly alike) and 100 (absolutely no overlap between the two), and its value can be interpreted as the percentage of one group's members who would have to be redistributed in order to produce exact similarity between the two distributions (for a detailed discussion, see Duncan and Duncan, 1955). As Jiobu and Marshall (1971) have argued persuasively, the index of dissimilarity is an extremely apt measure of differentiation, with a number of important advantages over other, usually simpler, measures of difference between populations (for further discussion, see Palmore and Whittington, 1970; Duncan and Duncan, 1955). One should note, of course, that what the index measures is the degree of difference between two populations, not the amount of inequality within either population; an index value of zero could be attained if blacks had the same high level of family income inequality as did white families.

Indexes of dissimilarity between Anglos, blacks, and Spanish heritage minorities were calculated between percentage distributions of the education attainment of the population aged 25 years and over (in eight categories), the occupation of employed persons 16 years old and over (in 12 categories), and family income (in 15 categories).[1] Needless to say, these data are anything but perfect. No account is taken of the quality of the years of education being compared. The occupational categories are extremely broad and it is likely that the average occupational status of minority people found in the same broad category as Anglos probably are found disproportionately in the lower status and more poorly paying jobs in that category. Family

income data are subject to a variety of conscious and unintentional distortions, and neglect unreported income and income in kind. For present purposes, there is little that can usefully be done to correct these data; it should be emphasized, however, that these estimates of differences between majority and minority populations probably minimize majority-minority differences, and that the true differences are quite likely to be considerably greater than these unadjusted data show.

The indexes of dissimilarity, based as they are on the summation of absolute differences, say nothing about the direction of difference between two populations. The percentage distributions used in constructing the indexes of dissimilarity were examined to see whether there was a clear direction to the percentage differences. In most cases, as a later paper will show, this "crossover" effect was observed clearly (c.f. Palmore and Whittington, 1970).

The measures of residential segregation employed in part of the analysis are also indexes of dissimilarity, computed from 1960 census data. The Taeuber and Taeuber (1965:32) indexes for census block data on 207 U.S. cities were used for black-white comparisons; the UCLA Study Project's (c.f. Grebler, et al., 1970) indexes of residential dissimilarity for census tracts between the Spanish-surname and Anglo populations were employed for 35 Southwestern cities. Use of these data was dictated by practicality and introduces some problems into the analysis. First, the Spanish-surname indexes, aside from the generic problems of any data on Spanish heritage groups in the U.S. (see Hernandez, Estrada, and Alvirez, 1973) is calculated on tracts rather than the smaller census block used in the calculations of the

nonwhite-white segregation index; this probably results in a somewhat lower estimate of Spanish heritage segregation relative to black segregation. Second, the 1960 segregation indexes are based on populations which are not identical to those measured in the endogenous variables - nonwhites in 1960 versus Negroes in 1970 and white persons of Spanish surname in the Southwest in 1960 versus all persons of Spanish language and Spanish surname in 1970 (c.f. Hernandez, Estrada, and Alvirez, 1973). Given the generally high proportion of the nonwhite population that is Negro, the former issue seems less of a problem than the latter. A third problem is the limitation on the availability of data on Spanish heritage people in 35 Southwestern cities in 1960; available resources ruled out any extension of these data, at least for the present. Finally, the indexes are based on data for cities, not SMSA's; the segregation measure usually represents the index for the central city of an area, or a simple average of such indexes if the indexes were available. The assumption of a high correlation between the central city index used here and the segregation index that might be obtained for an entire SMSA seems quite reasonable, given the research of the Taeubers (1965:55-62) on this question for the Negro population. Hopefully, future research will assess whether this is an accurate assumption. In the meantime, the results of this part of the analysis must be regarded as only tentative and of illustrative value.

The measure of minority population increase used in this analysis was a simple percentage increase in each population between 1960 and 1970, suggested by Hartley (1972) as an alternative to the Jiobu-

Marshall measure, the simple difference between the percent non-white in the two census years. This change seems warranted both by the empirical results of their research and by Hartley's theoretical argument. The measure of population change for the black-Anglo comparison in the present research is the intercensal percentage increase in the nonwhite population, in most cases well over 90% of which is the Negro population (U.S. Bureau of the Census, 1973:Table 3).

Since the measurement of the Spanish language or heritage population over time presents few alternatives (c.f. Hernandez, et al., 1973), only crude indicators of change in the size of the Latino population were generated.

In the 25 SMSA's with data on Puerto Ricans, the population of Puerto Rican birth and parentage in 1960 was calculated for those counties which made up each SMSA in 1970 (c.f. U. S. Bureau of the Census, 1972:Table 81). In the remaining 218 SMSA's, the percent of the population of Cuban, Mexican or other Latin American (c.f. U. S. Bureau of the Census, 1972:Table 81) birth or parentage in the two census years was used to calculate a simple index of the Latino population. The limitations of such an index are obvious, given its inability to measure third and later generations.

No lengthy justification of this measure will (or can) be offered; it is employed because it seemed the least unattractive of the few alternatives available.

The remaining variables are measured in straightforward fashion. The percentage of the civilian labor force employed in manufacturing industries (U.S. Bureau of the Census, 1972:Table 87) is used, as in

Jiobu and Marshall, as an index of industrial structure. The measures of minority presence are defined as the percentages of an area's population Negro and of Spanish heritage (U. S. Bureau of Census, 1973:Table 3). Area population size is SMSA total population, expressed in log form to deal with the influence of a few very large cases (U. S. Bureau of Census, 1973:Table 3). The regional divisions examined in the research are principally the Southwest (Arizona, California, Colorado, New Mexico and Texas), three states of the Northeast (New Jersey, New York and Pennsylvania), all the states of the South (as defined by the Census Bureau) excluding Texas, and the residual category of the remaining states. In one part of the analysis, a dummy variable is used to represent an area's location in the South (a "1") or outside it (a "0"). These divisions are used because they correspond to important differences in the reporting of data on Spanish heritage minorities.

Regional Differences

Table 1 presents the means and standard deviations of the measures of differentiation, reported for the entire set of S.M.S.A.'s as well as by region. In fact, given that the 1970 Census reports data on different Spanish heritage groups for different sets of states, there is no way to isolate a regional effect as such from the data (see Hernandez, Estrada, and Alvirez, 1973). The Census reports detailed educational, occupational, and income data on persons of Puerto Rican birth or parentage in three Middle Atlantic states (with 25 S.M.S.A.'s). Similar data are reported on persons of Spanish language or Spanish surname for five Southwestern states (with 46 S.M.S.A.'s),

and on persons of Spanish language for the remaining 42 states and the District of Columbia (with 172 S.M.S.A.'s). The Spanish language population consists of those persons who report that Spanish was spoken in the home while they were children or who reside in a household whose head reported Spanish as a mother tongue. The data for the Southwest add to this language group those persons whose surnames are found on a list of over 8,000 Spanish surnames.

To be sure, these data all deal with Spanish heritage or Latino minorities, but they are certainly conceptually different enough to make one hesitate to treat them as equivalent. As Table 1 makes clear, the degree of differentiation of each group from the Anglo population clearly varies, probably reflecting both the unique experiences of these groups as well as regional effects. For all groups, black and Latino, educational differentiation is consistently the lowest of the three dimensions, with occupation differentiation usually only slightly higher than income differentiation. In the three middle Atlantic states, the degree of black-Anglo differentiation is considerably lower for all three dimensions than the Puerto Rican-Anglo level. The reverse is true in the remaining states, with the Spanish heritage-Anglo level of differentiation lower than the black-Anglo level, the single exception being that educational differentiation between Spanish heritage persons and Anglos in the Southwest is higher than black-Anglo. It is important to note that these comparisons hold true for the population in metropolitan areas only; comparable figures on the entire population might be substantially different.

Table 1 shows that the highest levels of differentiation from the Anglo population occur among Puerto Ricans in the Middle Atlantic areas and among blacks in southern S.M.S.A.'s. The data for Puerto Ricans deals with only first and second generation Puerto Ricans in the U.S., and excludes the third and later generations, presumably less differentiated from the Anglo population. The relatively high level of black-Anglo differentiation in the South is consistent with other reports of the level of racial discrimination in that region (c.f. Glenn, 1966; Dowdall, 1974). Levels of Spanish-Anglo differentiation are somewhat higher in the Southwest than in the other two remaining regions, which show substantially similar patterns.

As indicated above, all of the data for Spanish heritage groups were analyzed separately by region because they show important regional differences (see partial regression coefficient in metric form, Table 3). However, in the case of the black-Anglo equations, a dummy variable for location in the South is used; while some interaction was noted in the South-nonSouth comparisons, this offers considerable simplification without great distortion.

Basic Results

We first present the overall results of the analysis, and then turn to the findings for each minority-majority combination. Tables 2 and 3 present the zero-order correlations, means, and standard deviations of all of the variables. Tables 4 and 5 contain the results of the analysis in the form of the regression equations in both metric or unstandardized and standardized form. For comparison of populations with different variances (such as the different

Spanish heritage regional results), the metric form is useful; evaluation of the relative importance and character of the effects of a set of variables on a dependent variable should make use of the results in standard form.

The results of the four separate analyses (Tables 4 and 5, Figures 2 through 5) show enough diversity to defy any simple summary, but some generalizations can be made. Inspection of the metric coefficients shows a relatively similar and important role of educational differentiation shaping occupational differentiation. Substantial parts of the effects of industrial structure and population size on occupational differentiation are mediated by educational differentiation. By contrast, occupational differentiation plays considerably different roles in each of the four analyses, particularly in the case of the Puerto Rican-Anglo results. Contrary to the other three analyses and to the theoretical arguments cited earlier, occupational differentiation has a moderate and negative direct effect on income differentiation between Puerto Ricans and Anglos in the Middle Atlantic states; while the sign is as expected, the size of the direct effect of occupational differentiation on income differentiation is surprisingly small for the Southwestern Latino-Anglo results. (It might be helpful to keep in mind that a 'positive' effect means an increase and a negative effect a decrease, in differentiation.)

The results show general support for the predictions about the role of area population size in reducing differentiation; size has a consistent overall negative impact on the dissimilarity measures in all four analyses. Even when taking industrial structure, percent

minority, and other important correlates of population size into account, the results show that larger area size independently acts to lower dissimilarity between majority and minority populations. Similarly, the Jiobu-Marshall (1971) finding about the negative effect on differentiation of recent increases in the minority population holds true for all four analyses. Moreover, location in the South has a positive net effect on black-Anglo income differentiation, as predicted and found by Jiobu and Marshall (1971). The data of these analyses are consistent with the expectation that areas with higher proportions of employment in manufacturing will tend to have lower majority-minority differentiation, with the significant exception of the Spanish language population outside the Southwest. This group shows moderate positive effects, including a reasonably important direct effect on income differentiation. The overall impact of the percentage of a community's population who are members of a particular minority group was generally positive for blacks, Puerto Ricans, and the largely Chicano population of the Southwest, a finding consistent with the thesis of exploitation or 'majority gains from minority subordination' (c.f. Glenn, 1966; Dowdall, 1974); it did not hold true for the Spanish heritage group elsewhere.

The expectation that the presence of another important minority group would increase majority-minority differentiation was supported (though weakly) for blacks and somewhat more substantially for the Latino population of the Southwest; an increase of one percentage point in the black population of a Southwestern metropolitan area raised Chicano-Anglo income differentiation by a quarter of a unit.

This variable had a negligible net effect on Anglo-Spanish heritage differentiation outside the Southwest, and a very strong negative effect on Puerto Rican-Anglo income differentiation, with a one percent increase in the black population lowering the index of dissimilarity for income by eight-tenths of one unit.

As the R^2's of Table 5 show, the model yields relatively good statistical explanations for the various dependent variables, and explains from 40 percent (in the case of Puerto Rican-Anglo differentiation) to 70 percent (in the case of the Southwestern Chicano-Anglo differentiation) of the variance in income differentiation. However, this is a relatively minor factor in evaluating the utility of a particular model in comparison with its ability to clarify a particular problem. Let us turn to a brief summary of what the models tell us about particular situations of minority-majority differentiation in the United States in 1970. Perhaps we might begin by noting that we are forced to present at least four different portraits, since regional and racial and ethnic differences don't allow a single summary picture to be drawn.

Black-Anglo Differentiation. As summarized in Figure 2, black-Anglo income differentiation is shaped very powerfully by educational differentiation and less importantly by occupational differentiation; education in particular serves to mediate the important net negative effects of industrial structure (percent manufacturing), area population size, and recent increases in the proportion of the area's population black. A strong positive effect of percent black on educational differentiation and, indirectly through education, on income

differentiation is offset almost completely by a negative direct effect on income differentiation; percent black has almost no net importance. In fact, the proportion of the local population in one of the Spanish heritage minorities has a slightly greater effect than percent black, largely due to a small indirect effect through occupational differentiation; consistent with the argument of the positive effect on differentiation of inter-minority competition, percent Spanish heritage has a net positive effect, though very modest in size. Similarly, location in the South has a modest positive effect on income differentiation, particularly through educational differentiation.

Judged by their overall net effects on income differentiation, the most important variables (in descending order) are educational differentiation, percent employed in manufacturing (negative), percent black (negative) and area population size (negative), occupational differentiation, region, percent Spanish heritage minority, and percent black.

Puerto Rican-Anglo Differentiation. As shown in Figure 3, educational and occupational differentiation play important roles, direct and mediating, in determining Puerto Rican-Anglo income differentiation, though with opposite effects, given the negative path between occupational and income differentiation. In contrast to the black-Anglo situation, area manufacturing employment has a large positive effect through education, offset by a negative direct effect on income. Presence of a black minority has slight positive effects on educational and occupational differentiation, but an important

negative effect on income differentiation, the opposite of that expected from the perspective of inter-minority competition. Area population size has a negative effect on income differentiation, entirely indirectly through lowering educational and occupational differentiation. The proportion of the area population Puerto Rican has positive effects directly on income differentiation and indirectly through occupations (consistent with the argument of minority exploitation) but also shows smaller negative effects through education. Again in contrast to the Jiobu-Marshall (1971) argument that increasing numbers of newcomers will encounter greater discrimination and consequent increases in differentiation between themselves and a dominant group, the data show contradictory modest indirect effects and a very large and negative direct effect on income differentiation.

When ranked in order of overall net effect, educational differentiation again is most important (positive), followed by percent black (negative -- in striking contrast to the competition view), occupational differentiation (negative), percent Puerto Rican increase (negative), manufacturing employment (negative), percent Puerto Rican (positive), and total population size (negative).

Anglo-Spanish Surname and Language in the Southwest. Figure 4 shows that, while educational differentiation plays an important role, similar to its position in the black and Puerto Rican cases, occupational differentiation has almost no effect on income differentiation; this may reflect considerable wage discrimination against Chicano workers in the Southwest. Educational differentiation has a very important positive effect on occupational differentiation. Most

important of the exogenous factors, and second in importance to education, is percent Spanish heritage minority, with moderately strong positive paths to income differentiation, and an important indirect effect in the same direction through education. This is consistent with the existence of important Anglo gains from minority subordination. Manufacturing employment importantly decreases income differentiation, largely through its strong negative effects on educational differentiation. Percent minority increase has moderate direct and, through education, indirect negative effects on income differentiation. Area population size, in addition to some small indirect effects, has a very substantial negative direct impact on income differentiation.

Educational differentiation has the greatest net effect on income differentiation (positive), followed in decreasing order by percent minority (an index of exploitation), manufacturing employment (negative), area population size (negative), percent black (positive), percent minority population change (negative), and occupational differentiation (positive).

Persons of Anglo-Spanish language (excluding the Southwest). In figure 5, by far the most important factor in decreasing the socioeconomic differentiation between Anglos and persons of Spanish language outside the Southwest is the metropolitan area's size, which has a large direct and negative effect on income differentiation as well as important similar indirect effects through educational and occupational differentation. This surprising finding may reflect the

fact that this region has proportionately very few persons of Spanish heritage minorities; increasing area size may indicate a smaller liklelihood of being identified as a group against which discrimination is practiced. Educational and occupational differentiation have important effects on income differentiation, though the direct effect of educational differentiation on income differentiation is surprisingly modest. In contrast to the three preceding analyses, the data for this group show moderate and positive direct and indirect effects (especially through education) of manufacturing employment; the short-term increase in the minority population has a small effect in the predicted (negative) direction on income differentiation, and negligible indirect effects through the other differentiation measures. The expected positive effect of percent Latino minority on income differentiation does not obtain; small, indirect effects and a moderate direct effect on income differentiation are both negative, seemingly at odds with the exploitation thesis of majority gains from minority subordination. The percent of the area's population black has a small negative effect on income differentiation through occupational differentiation, balanced by a small positive direct effect, consistent with the inter-minority competition arguments.

Judged by overall net effects on income differentiation, area population size (negative) is most important, followed by educational and occupational differentiation (positive), manufacturing employment (positive), percent persons of Spanish heritage (negative), percent minority increase (negative), and percent black (no net effect).

The Impact of Residential Segregation. The foregoing results are based on models in which residential segregation has not been examined. Bahr and Gibbs (1967) and Jiobu and Marshall (1971) found little support for the presumed impact of this factor on other dimensions of racial differentiation. In commenting on the latter study, Hartley (1972) notes that this might have been due to the almost invariably high level of residential segregation between blacks and whites in the United States; Jiobu and Marshall reported, for 74 urban places, a mean of 88.48 and a standard deviation of 4.81 for an index of dissimilarity between blacks and whites calculated from census block data (c.f. Taeuber and Taeuber, 1965).

Because of the imperfect character of the segregation index used, the following analysis is more illustrative than definitive, and the exact values of the estimates should be regarded as very tentative and quite likely inaccurate. We do not present results for black-Anglo differentiation, though an analysis using a 1960 index of residential dissimilarity between blacks and whites showed relatively similar results (to the extent that can be judged, given important differences in the two models) to those of the earlier reports. Segregation, considered as an exogenous variable, had very modest direct and somewhat more important indirect effects (through educational and occupational differentiation) on income differentiation; its net effect was not particularly important, however.

Figure 6 presents the results for the Southwestern Anglo-Spanish heritage minority data, the one situation in which measures of residential segregation between Anglos and persons of Spanish surname were available for 1960 (Grebler et al., 1970). The

segregation index for 31 central cities had a mean of 54.78 and a standard deviation of 11.39, with a coefficient of variation (.21) four times larger than that (.05) for the measure of black-white segregation reported by Jiobu and Marshall (1971). The impact of segregation on educational differentiation is extremely powerful (if, of course, one believes the model to be accurate), suggesting that the residential segregation of the Chicano population in the Southwest has decisive consequences for later educational achievement and, through that factor, for income differentiation. Segregation has a moderate and negative effect on occupational differentiation, perhaps reflecting the growth of a parallel occupational structure within the more segregated Chicano communities.

These estimates are meant merely as illustrative; a more extensive analysis should await the generation of area-wide segregation scores for all of the metropolitan areas. The striking character of the findings seems consistent with the argument that the degree of local Anglo discrimination against Spanish heritage peoples in the Southwest (a much more variable quantity from one metropolitan area to another than the treatment of blacks by whites), is of decisive importance to the dimensions of differentiation examined here. It is also noteworthy that both analyses for the Southwest showed consistently important effects of the percent of the population of Spanish heritage, an indication of important Anglo gains from minority subordination (c.f. Glenn, 1966; Dowdall, 1974).

Discussion

The estimates of the importance of different variables must be seen in the context of the particular model and the measurement procedures discussed above. Surely this can be improved upon in future research. First, the temporal ordering of the variables should be analyzed in models which introduce some difference in time between the differentiation measures and their determinants; Jiobu and Marshall (1971) illustrate this approach, and Hartley (1972) notes some of the inevitable problems in this area. Second, further work needs to be done on the impact of the presence of other minorities on particular minority-majority relations, an issue which has hardly been touched on in the literature; the simple additive and linear models presented here should give way to more sophisticated models, since it is very likely that important interactive effects and non-linear relationships are present, as the results for the Anglo-Puerto Rican and Spanish language minorities outside the Southwest show. Third, a more extensive analysis of the impact of industrial structure and the character of industrial differentiation seems warranted by the results, particularly for Puerto Ricans and persons of Spanish language outside the Southwest. Fourth, much more attention should be given to the problem, raised by Jiobu and Marshall (1971) and Hartley (1972), of the ways in which migration into and out of metropolitan areas is affected by these dimensions. Fifth, important variables ignored thus far such as age structures, male-female inequality, generational status, and internal migration should be examined in future work.

Finally, and perhaps most important to the interpretation of this work, these findings have to be linked to a broader understanding of the processes of racial and ethnic inequality and oppression. Though this paper has been limited to an examination of the data, this only reflects the limitation of space, not a judgment about the lack of of importance of the other task. The evidence presented here is broadly consistent with the view that the Anglo majority continues to benefit from the presence of blacks, Chicanos, and Puerto Ricans (c.f. Glenn, 1966; Dowdall, 1974; Szymansky, 1974), groups which have both shared fundamentally similar problems (Blauner, 1972), and undergone their own unique developments in North America (Alvarez, 1973). Models such as the foregoing are perhaps helpful in understanding "objective" phenomena, but should lead to some understanding of how the groups in question react to and shape these events. A critical area which should be explored in future work concerns both the consciousness of local inequalities and consequent organizational attempts (or their absence) which members of racial, cultural, sex, and other oppressed groups make in response. Despite available data and presumably widespread interest in such questions, we know very little about the local impact on such critical areas as educational, occupational, or income differentiation of rising class, race, or ethnic consciousness and organization. An important exception is recent work by Richard Child Hill (1974), which demonstrates the role industrial unconization has played in reducing black-white income inequality. The development of more adequate models of racial and ethnic differentiation will have to extend this work to include this and other forms of the organization of minorities.

NOTES

[1] Years of school completed for men and women 25 years old and over were coded into the following eight categories:

> no school years completed; 1 to 4 years, 5 to 7, and 8 years of elementary school completed; 1 to 3 years, and 4 years of high school completed; 1 to 3 years, and 4 or more years of college completed. The census (U.S.) (1972:Tables 83, 91, 97) uses the same categories for Negroes and Spanish heritage persons, and a slightly more detailed set for all men and women.

The occupational categories for employed persons used in this analysis are the twelve broad classes used by the U.S. Census (1972: Tables 86, 93, 99): Professional, technical, and kindred workers; managers and administrators, except farm; sales workers; clerical and kindred workers; craftsman, foreman, and kindred workers; operatives, except transport; transport equipment operatives; laborers, except farm; farmers and farm managers; farm laborers and farm foremen; service workers, except private household; private household workers. The Census publishes data for S.M.S.A.'s on an additional 37 more detailed divisions for all persons, and 28 more divisions for Negroes and Spanish heritage persons. The major classes listed above were used here to simplify this analysis; a later paper will explore the effect, if any, of using broad categories.

Family income in 1969 was coded by the U.S. Bureau of the Census (1972: Tables 89, 94, and 100) into the following 15 categories: less than $1,000; $1,000 to $1,999; $2,000 to $2,999; $3,000 to $3,999; $4,000 to $4,999; $5,000 to $5,999; $6,000 to $6,999; $7,000 to $7,999; $8,000 to $8,999; $9,000 to $9,999; $10,000 to $11,999; $12,000 to $14,999; $15,000 to $24,999; $25,000 to $49,999; $50,000 or more.

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Table 1.--Type of data, number of cases, means and standard deviations of differentiation measures, for blacks and Spanish heritage minorities in 243 S.M.S.A.'s, by region, 1970. (For definitions, see text.)

Item	Total U.S. (N=243)		Three Middle Atlantic States[a] (N=25)		Five Southwestern States (N=26)[b]		14 Southern States (N=64)[c]		Remaining 28 States (N=108)[d]	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Educational differentiation, black-Anglo	25.76	9.71	20.85	4.31	24.78	8.19	29.34	8.95	25.20	10.93
Educational differentiation, Spanish-Anglo	26.06	12.01	41.04	12.58	32.82	11.23	21.20	10.06	22.60	8.95
Occupational differentiation, black-Anglo	35.75	10.06	30.01	9.32	38.38	10.95	42.93	5.69	31.70	9.06
Occupational differentiation, Spanish-Anglo	25.55	11.78	45.53	15.02	28.63	6.74	19.66	9.19	23.10	8.38
Income differentiation, black-Anglo	33.98	11.24	29.05	5.98	34.14	9.50	36.41	7.01	33.61	14.19
Income differentiation, Spanish-Anglo	26.34	12.51	43.78	13.80	24.05	7.38	23.90	13.27	24.74	10.26

[a]New York, New Jersey; Pennsylvania; data on persons of Puerto Rican birth or parentage.

[b]Arizona, California, Colorado, New Mexico, and Texas; data on persons of Spanish language or Spanish surname.

[c]Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Virginia, West Virginia; data on persons of Spanish language.

[d]All other states, n.e.c.; data on persons of Spanish language.

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Table 2. Zero-order correlations, means, and standard deviations, data on blacks for 243 S.M.S.A.'s, 1970.

Variable[a]	Correlations with								Mean	S.D.
	X_2	X_3	X_4	X_{5B}	X_R	X_{7B}	X_{8B}	X_{9B}		
X_1	-.16	-.35	.05	.12	-.22	-.30	-.35	-.25	25.11	11.39
X_2		-.18	.16	-.28	.71	.26	.41	.08	9.61	9.36
X_3			.00	-.01	-.18	.04	.19	.11	4.98	11.38
X_4				.29	-.02	-.27	-.30	-.25	12.60	1.0
X_5					-.32	-.29	-.45	-.31	32.39	38.80
X_R						.22	.43	.13	0.26	.44
X_{7B}							.68	.65	25.76	9.71
X_{8B}								.52	35.75	10.06
X_{9B}									33.98	11.24

[a] X_1, total percent employed in manufacturing; X_2, percent black; X_3, percent Spanish heritabe; X_4, total population (log); X_5, minority population increase; X_R, dummy variable for region (south =1; elsewhere =0); X_7, Anglo-minority educational differentiation; X_8, Anglo-minority occupational differentiation; X_9, Anglo-minority income differentiation. For variables X_5 through X_9, a subscripted 'B' indicates data on blacks; an 'S', data on Spanish heritage minorities.

Table 3.--Zero-order correlations, means, and standard deviations, data on Spanish heritage minority for 243 S.M.S.A.'s by region, 1970

Comparison and Variables[a]	Correlations with							Mean	S.D.
Puerto Rican-Anglo (N=25)	X_2	X_3	X_4	X_{5S}	X_{7S}	X_{8S}	X_{9S}		
X_1	-.47	-.17	-.28	.40	.32	.19	-.00	33.38	7.70
X_2		.58	.45	.18	-.31	-.37	-.38	6.72	6.28
X_3			.38	.22	-.27	-.41	-.23	1.14	1.86
X_4				-.03	-.39	-.44	-.17	13.23	1.10
X_{5S}					-.00	-.26	-.36	103.18	135.51
X_{7S}						.67	.40	41.04	12.58
X_{8S}							.23	45.53	15.02
X_{9S}								43.78	13.80
	Correlations with							Mean	S.D.
Spanish Surname & Language,-Anglo, Southwest (N=46)	X_2	X_3	X_4	X_{5S}	X_{7S}	X_{8S}	X_{9S}		
X_1	.36	-.40	.38	.32	-.58	-.44	-.49	16.02	7.29
X_2		-.49	-.01	.12	-.30	-.06	-.10	7.05	6.12
X_3			-.12	-.30	.52	.24	.50	20.01	19.81
X_4				.28	-.29	-.30	-.43	12.66	1.12
X_{5S}					-.37	-.16	-.44	37.62	50.23
X_{7S}						.77	.75	32.81	11.23
X_{8S}							.58	28.63	6.74
X_{9S}								24.05	7.38
	Correlations with							Mean	S.D.
Spanish Language-Anglo (N=72)	X_2	X_3	X_4	X_{5S}	X_{7S}	X_{8S}	X_{9S}		
X_1	-.26	-.14	-.02	-.19	.20	.23	.18	26.34	11.30
X_2		-.01	.22	-.05	-.13	-.25	-.15	10.72	10.22
X_3			.19	.16	-.05	-.01	-.23	1.51	2.14
X_4				.10	-.37	-.43	-.55	12.50	0.92
X_{5S}					-.11	-.07	-.14	164.63	715.68
X_{7S}						.68	.54	22.08	9.37
X_{8S}							.63	21.82	8.83
X_{9S}								24.42	11.44

[a]For identifications, see Table 2. note a.

Table 4.--Partial regression coefficients in metric (B) form for models of metropolitan socioeconomic differentiation, 243 S.M.S.A.'s by region, 1970.

Comparison; dependent variable	Predetermined Variables[a]								
	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	Constant
Black-Anglo, All S.M.S.A.'s (N=243)									
X_{7B}	-.20966	.30213	-.00481	-2.57587	-.03268	-1.93410			62.18520
X_{8B}	-.02994	.17086	.18898	-1.47005	-.04102	4.20355	.50807		39.57879
X_{9B}	-.03748	-.21142	.02278	.08060	-.03511	.84529	.63995	.14716	14.98601
Puerto Rican-Anglo, Middle Atlantic S.M.S.A.'s (N=25)									
X_{7S}	.44074	.03809	-.66774	-3.34080	-.00922				71.98055
X_{8S}	.13525	.12714	-1.21299	-2.47074	-.02947		.66039		50.16207
X_{9S}	-.28102	-.79658	.37418	.02834	-.03237		.61631	-.28467	48.71102
Spanish Surname and Language-Anglo, Southwestern S.M.S.A.'s (=46)									
X_{7S}	-.59273	.02343	.18521	-.70470	-.02860				48.43717
X_{8S}	-.05053	.15525	-.04707	-.47533	.02007		.53346		17.04479
X_{9S}	-.03015	.25531	.09038	-1.26199	-.01796		.36653	.01140	25.22758
Spanish Language-Anglo, Remaining S.M.S.A.'s (N=172)									
X_{7S}	.16360	.00018	.26304	-3.81884	-.00061				65.20084
X_{8S}	.07153	-.09022	.28823	.00014	-1.96059		.54002		33.02556
X_{9S}	.03968	.04583	-.81349	-.00051	-3.81411		.18241	.51075	56.69545

[a]For identifications, see Table 2, note a.

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Table 5.--Partial regression coefficients in standard (Beta) form for models of metropolitan socioeconomic differentiation, 243 S.M.S.A.'s, by region, 1970.

Comparison and dependent variable	Predetermined Variables[a]								R^2
	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	
Black-Anglo, All S.M.S.A.'s (=243)									
X_{7B}	-.24613	.29137	-.00564	-.26512	-.13065	-.08795			.24044
X_{8B}	-.03390	.15895	.21381	-.14596	-.15820	.18439	.49011		.64325
X_{9B}	-.03801	-.17613	.02308	.00717	-.12126	.03320	.55284	.13179	.46411
Puerto Rican-Anglo, Middle Atlantic S.M.S.A.'s (N=25)									
X_{7S}	.26966	.01903	-.09867	-.29242	-.09930				.22230
X_{8S}	.06928	.05316	-.15007	-.18106	-.26583		.55289		.57413
X_{9S}	-.15669	-.36257	.05039	.00226	-.31785		.56165	-.30986	.39392
Spanish Surname and Language-Anglo, Southwestern S.M.S.A.'s (N=46)									
X_{7S}	-.38454	.01277	.32676	-.07017	-.12791				.45538
X_{8S}	-.05460	.14095	-.13831	-.07883	.14949		.88852		.67046
X_{9S}	-.02979	.21193	.24281	-.19136	-.12232		.55816	.01042	.67506
Spanish Language-Anglo, Remaining S.M.S.A.'s (N=172)									
X_{7S}	.19721	.00019	.05999	-.37428	-.04673				.18180
X_{8S}	.09159	-.10444	.06982	-.20411	.01114		.57362		.52186
X_{9S}	.03920	.04093	-.15203	-.30633	-.03187		.14948	.39402	.53946

[a]For identifications, see Table 2, note a.

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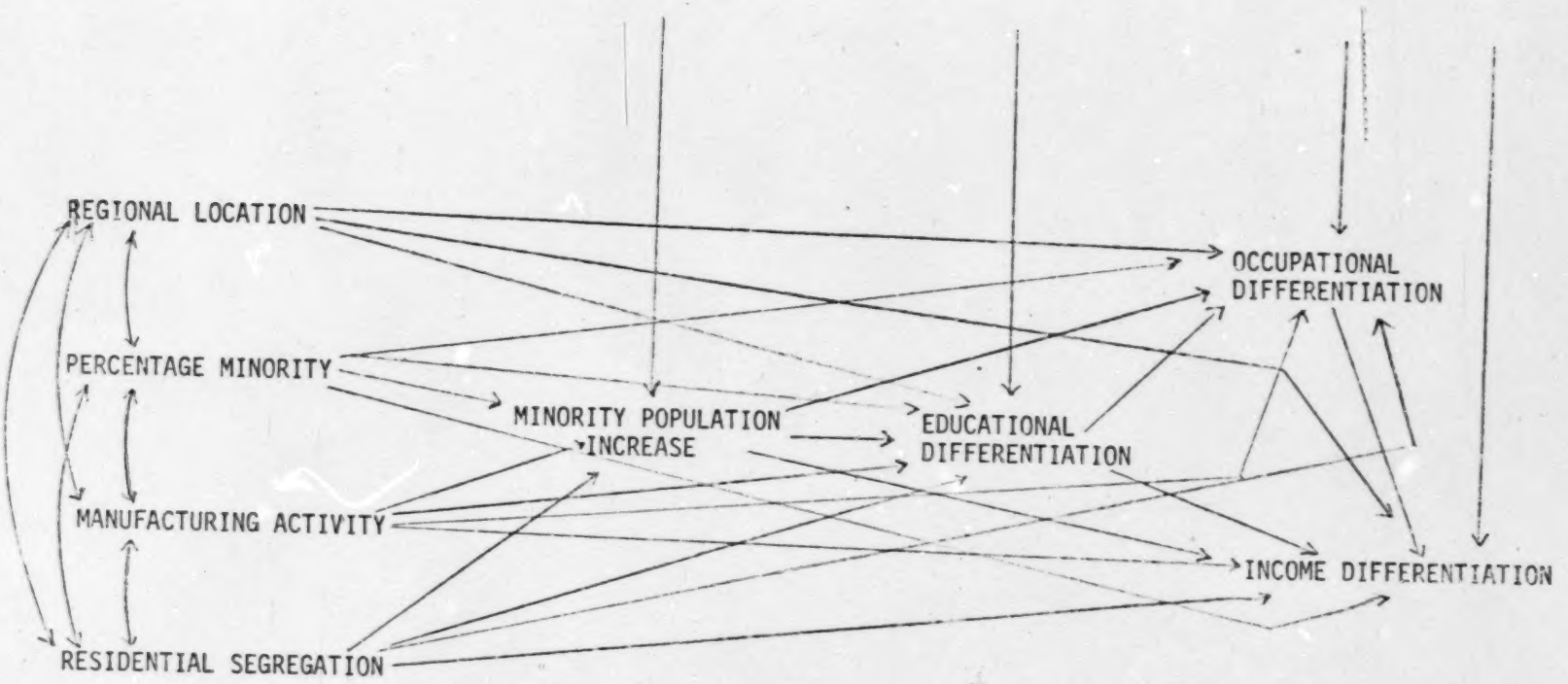

Figure 1. A Causal Model of Urban Differentiation.
(adapted from Jiobu and Marshall, 1971).

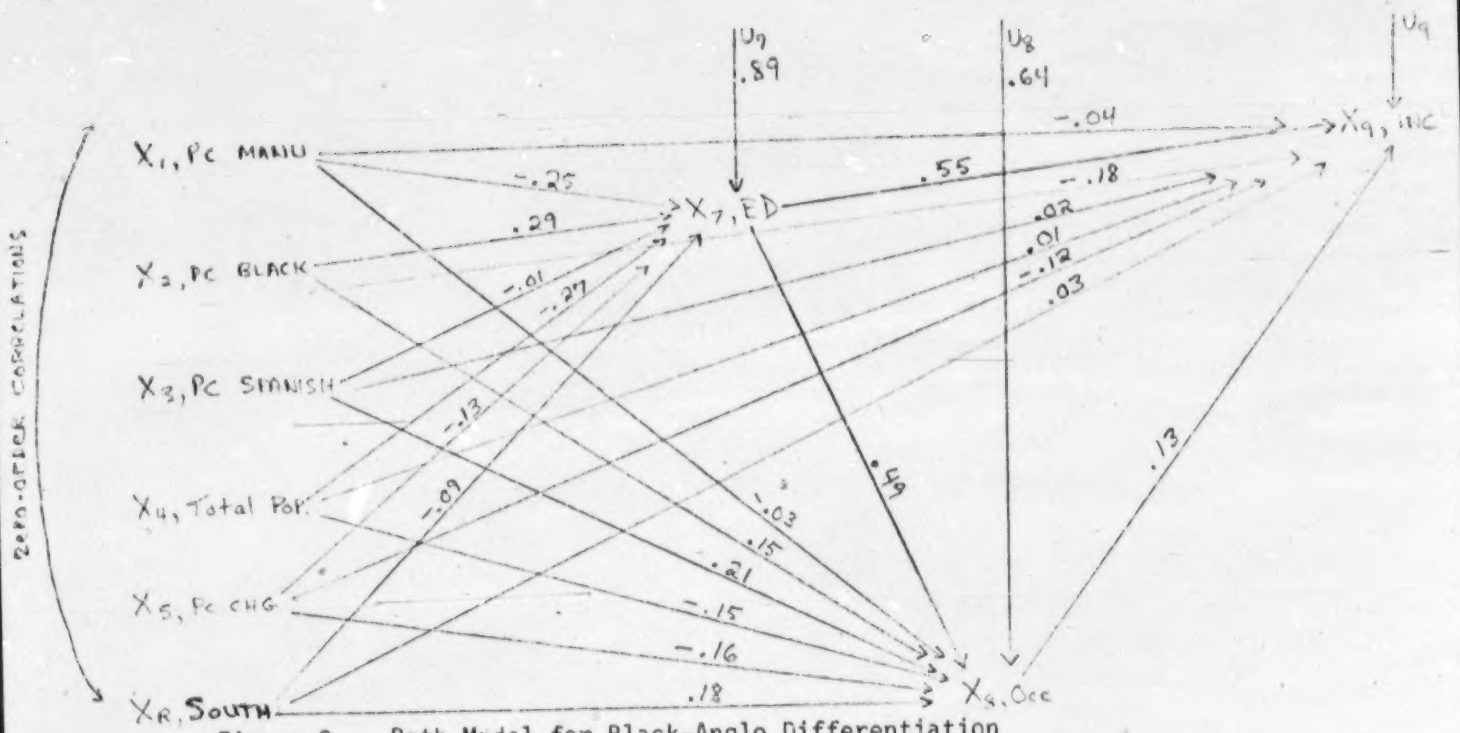

Figure 2 -- Path Model for Black-Anglo Differentiation

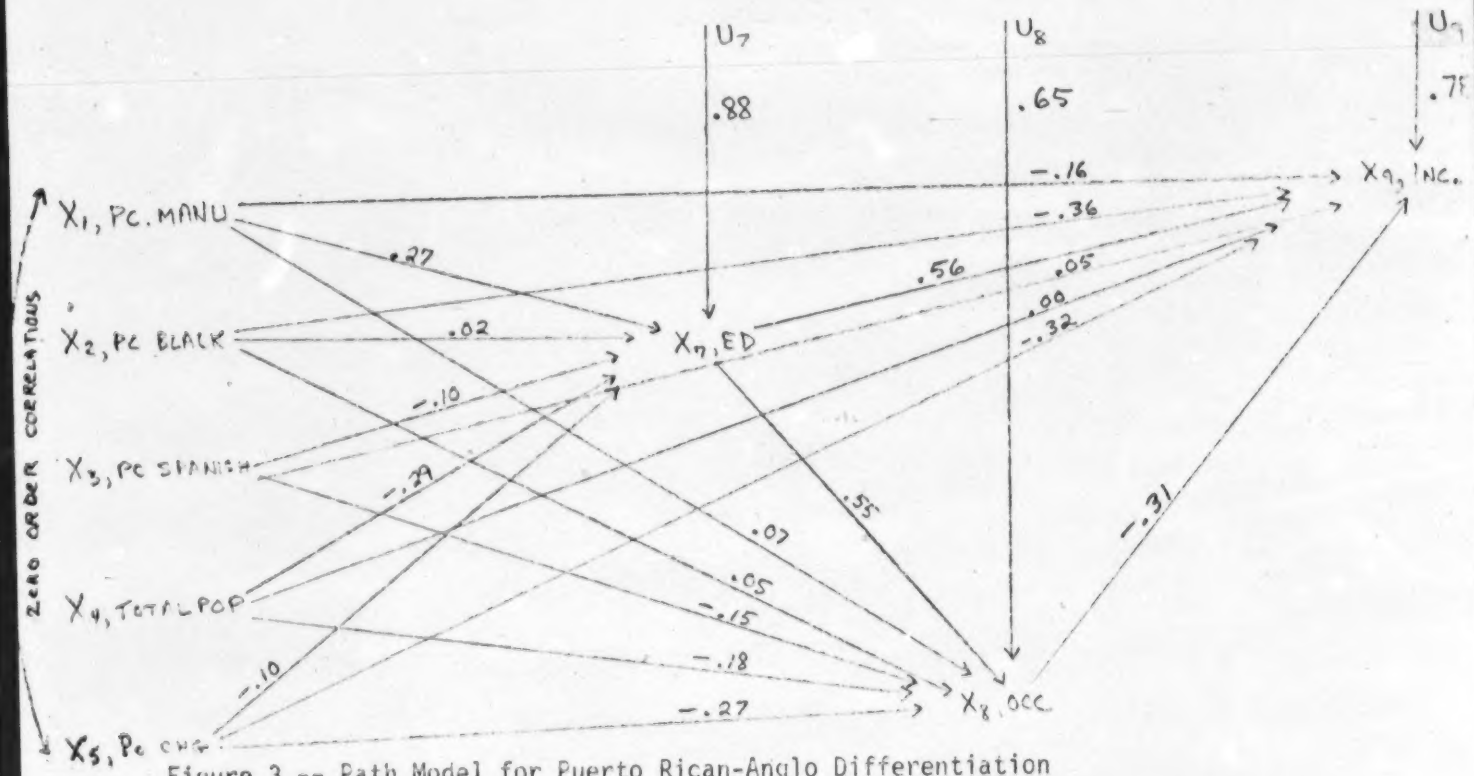

Figure 3 -- Path Model for Puerto Rican-Anglo Differentiation

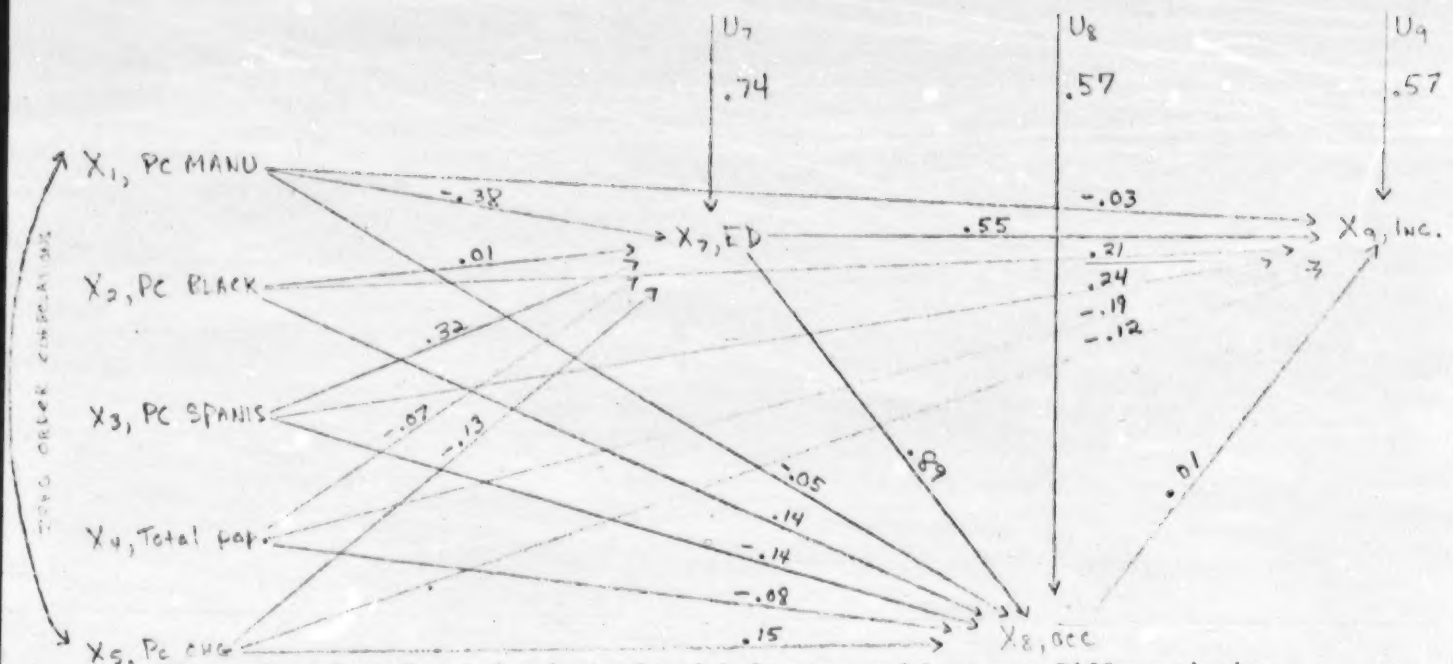

Figure 4 -- Path Model for Anglo-Spanish Surname and Language Differentiation in the Southwest

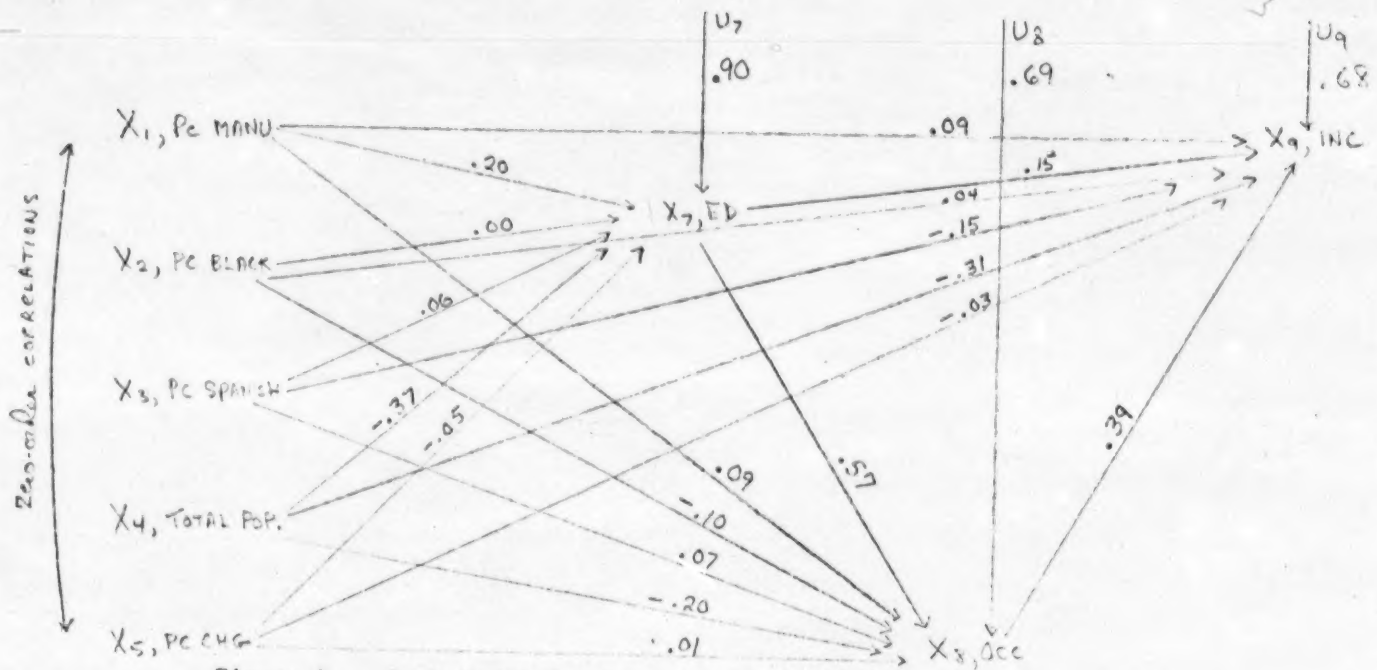

Figure 5 -- Path Model for Anglo-Spanish Language Differentiation outside the Southwest

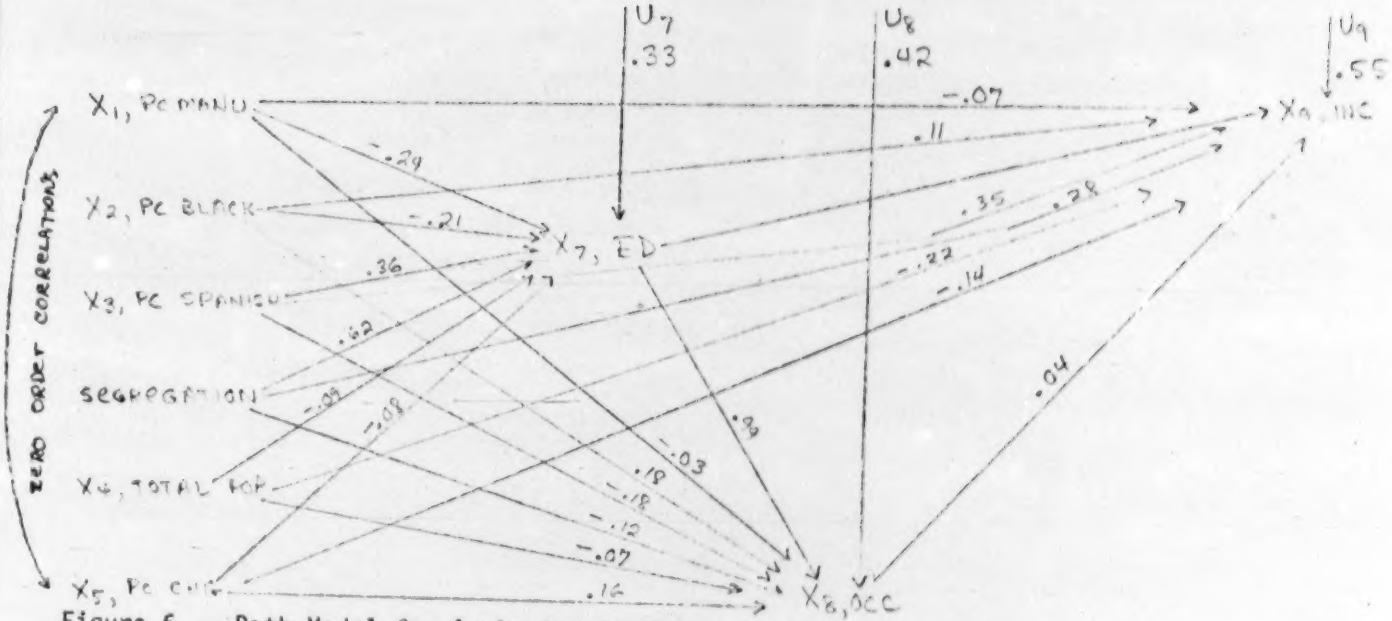

Figure 6 -- Path Model for Anglo-Spanish Surname and Language Differentiation in the Southwest, with Segregation